STRESS SHIFT IN NOUN-VERB CONVERSION PAIRS: THE CASE OF *IMPORT^N-IMPORT^V* PAIRS

EL CAMBIO DE POSICIÓN DEL ACENTO EN PAREJAS DE CONVERSIÓN NOMBRE-VERBO: EL CASO DE PAREJAS COMO *IMPORT^N-IMPORT^V*

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Abstract

Conversion is a word-formation process characterised, among other aspects, by the formal identity between the original word and the resulting one (*bottle* → *to bottle*). However, there are a few cases of conversion-related words which challenge this formal identity characteristic of conversion. One of these cases is that of noun-verb conversion pairs such as *import^N-import^V*, in which a type of phonological base allomorphy occurs: stress shift. In such cases, stress shift consists in nouns tending to be stressed on the first syllable (*import^N* /ˈɪmpɔːt/) while verbs are usually stressed on the last one (*import^V* /ɪmˈpɔːt/). This study aims to determine which are the most frequently occurring noun-verb conversion pairs displaying stress shift and why this type of allomorphy occurs. To answer these questions, a corpus of 157 noun-verb conversion pairs was compiled from frequency lists of nouns and verbs. Out of these pairs, 25 presented stress shift. Additionally, information about the etymology and the year of introduction into English of the 25 pairs with stress shift was gathered. It was found that all the noun-verb conversion pairs with stress shift are of Romance origin. Furthermore, the results suggest that the stress shift in noun-verb conversion pairs might be due to their adaptation to the Germanic stress system after being introduced into English from either Latin or French.

Keywords: allomorphy, conversion, derivational paradigms, (Germanic/Romance) stress assignment, stress shift.

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Resumen

La conversión es un proceso de formación de palabras caracterizado, entre otros aspectos, por la identidad formal entre la palabra original y la palabra resultante (*bottle* → *to bottle*). Sin embargo, hay unos cuantos casos de palabras relacionadas por conversión que desafían esta característica de identidad formal. Uno de estos casos son las parejas de conversión nombre-verbo como *import*^{N}-*import*^{V}, en las que ocurre un tipo de alomorfía fonológica en la base de la palabra: cambio de posición del acento. En tales casos, el cambio de posición del acento consiste en que los nombres tienden a acentuarse en la primera sílaba (*import*^{N} /ˈɪmpɔːt/) mientras que los verbos se suelen acentuar en la última (*import*^{V} /ɪmˈpɔːt/). Este estudio pretende determinar qué parejas de conversión nombre-verbo son las que presentan más habitualmente cambio de posición del acento y por qué este tipo de alomorfía ocurre. Para responder a estas preguntas, se recopiló un corpus de 157 parejas de conversión nombre-verbo provenientes de listas de frecuencia de nombres y verbos. De entre estas parejas, 25 presentaban cambio de posición del acento. Además, también se anotó la etimología y el año de incorporación al inglés de las 25 parejas con cambio de posición del acento. Se encontró que todas las parejas de conversión nombre-verbo con cambio de posición del acento son de origen romance. Asimismo, los resultados sugieren que el cambio de posición del acento en las parejas de conversión nombre-verbo puede deberse a la adaptación de dichas parejas al sistema de acentuación germánico una vez incorporadas al inglés del latín o el francés.

Palabras clave: alomorfía, conversión, paradigmas derivativos, asignación del acento (germánico/romance), cambio de posición del acento.

1. Introduction

'Conversion' is a word-formation process characterised, among other aspects, by the formal identity between the original word and the resulting one (Valera and Ruz 2020). Consider the word *bottle* in the sentences below:

(1) I have just bought a <u>bottle</u> of wine.

(2) My uncle <u>bottles</u> wine at his vineyard.

The underlined words in (1) and (2) are examples of conversion. By means of this word-formation process, the noun *bottle* (illustrated in (1)) generates the verb *to bottle* (illustrated in (2)). As typically occurs in conversion, the original word *bottle*^{N} and the converted (i.e. resulting) word *bottle*^{V} are formally identical.

However, there are a few cases of conversion pairs similar to *bottle*^{N}-*bottle*^{V} in which this feature of formal identity is challenged to some extent. This is because such cases

present phonological base allomorphy. For instance, there are cases of voicing of the final phoneme (e.g. *house*ᴺ /haʊs/ vs. *house*ⱽ /haʊz/), stress shift[1] (e.g. *import*ᴺ / ˈɪmpɔːt/ vs. *import*ⱽ /ɪmˈpɔːt/) and stress shift in combination with consonant syllabicity/vowel reduction (e.g. *rebel*ᴺ /ˈrɛbl/ vs. *rebel*ᴺ /ɹɪˈbɛl/).

The aim of the present study is to investigate stress shift in noun-verb conversion pairs in order to better understand why it occurs. Given that stress shift may be displayed on its own (*import*ᴺ /ˈɪmpɔːt/ - *import*ⱽ /ɪmˈpɔːt/) or along with another type of allomorphy (i.e. consonant syllabicity/vowel reduction: *rebel*ᴺ/ˈrɛbl/ - *rebel*ᴺ /ɹɪˈbɛl/; vowel reduction: *object*ᴺ /ˈɒbdʒɛkt/ - *object*ⱽ /əbˈdʒɛkt/), the present study will be based on cases that exhibit both stress shift and stress shift in combination with vowel reduction.

2. Theoretical Framework

Before analysing the issue at hand in more detail, it is necessary to discuss first the concepts of 'derivational paradigms', 'allomorphy' and conversion. A discussion about derivational paradigms is relevant because noun-verb conversion pairs such as *bottle*ᴺ-*bottle*ⱽ, *import*ᴺ-*import*ⱽ or *object*ᴺ-*object*ⱽ can be considered to constitute a paradigm (together with other words) based on lexico-semantic properties. For example, (part of) the derivational paradigm of *import* would be:

(3) *import*ⱽ
 *import*ᴺ
 importer
 importation
 importable

Secondly, as the cases of *import*ᴺ-*import*ⱽ and *object*ᴺ-*object*ⱽ present phonological base allormophy, it is pertinent to discuss the phenomenon of allomorphy in some detail. Lastly, given that these pairs are cases of conversion, it is also helpful to offer an overview of this word-formation process.

2.1. Derivational Paradigms

The notion of paradigm (i.e. a set of items which are abstractly represented in a set of cells associated with a series of properties (Štekauer 2014: 355; Bauer 2019: 156) is typically associated with inflectional morphology and, therefore, applied to cases of inflection. For instance, the inflectional paradigm of the Spanish verb *cantar* 'to sing' for the present tense (and indicative mood) is:

(4) *cant-o*   sing-ᴘʀꜱ.ɪɴᴅ.1ꜱɢ
 cant-as   sing-ᴘʀꜱ.ɪɴᴅ.2ꜱɢ

cant-a	sing-PRS.IND.3SG
cant-amos	sing-PRS.IND.1PL
cant-áis	sing-PRS.IND.2PL
cant-an	sing-PRS.IND.3PL

This treatment of inflection in terms of paradigmatic structure has not been traditionally applied to derivation. Gaeta and Angster explain that, while the insertion of a word into a syntactic structure is not considered to require any reference to a paradigm because any lexeme can be inserted into any syntactic structure, inflection does require the notion of a paradigm because, once the lexeme to be inserted is selected, the appropriate word-form of this lexeme has to be chosen from the set of all its possible word-forms to fit into the syntactic context (2019: 250-251). However, this traditional view is challenged by authors who argue that not only inflectional morphology but also derivational morphology can be discussed in terms of paradigmatic structure and that, in fact, the notion of paradigm is important in derivation (Bauer 1997; Štekauer 2014; Boyé and Schalchli 2016; Bauer 2019).

In the literature, inflectional paradigms have been mainly characterised by the following features: (i) inflectional paradigms are arranged around a basic form and the members of any given paradigm share the same base or base-type (Bauer 1997: 244); (ii) each cell of an inflectional paradigm is filled with a word form realising some properties, namely morpho-syntactic properties (e.g. PLURALITY, GENDER, CASE, TENSE, etc.) (Bauer 1997; Beecher 2004; Bauer 2019); and (iii) inflectional paradigms are considered to be regular and very predictable (Bauer 1997; Štekauer 2014; Bauer 2019). Arguably, these features can also describe derivational paradigms.

Regarding the first feature, Bauer highlights that derivational paradigms are also organised around a basic form and that they are sets of derivationally-related items (1997: 245), namely words which share a base or base-type:

(5) *man*
   man-ful
   man-hood
   mann-ish
   man-ly

(Bauer 2019: 159)

The above set of words forms a paradigm that is made up by derivationally-related words which are arranged around the same basic form: the base *man-*.

With respect to the second feature, Bauer (1997), Beecher (2004) and Bauer (2019) point out that each cell of a derivational paradigm is filled with a word

realising some properties, namely lexico-semantic properties (e.g. AGENT, INSTRUMENT, RESULT OF ACTION, etc.):

(6) *attend*   *compete*   *cook*^{V} *create*   *dance*
     attendant   *competitor*   *cook*^{N} *creator*   *dancer*

(Bauer 2019: 160)

In (6), each of the columns presents a derivational paradigm, and each of these paradigms is constituted by one form which realises the lexico-semantic property of AGENT.

Along the same lines, Štekauer offers another way of presenting this feature by carrying out a parallel analysis of both inflectional and derivational paradigms (2014: 358-359). The author argues that, in the same way that members of a plural inflectional paradigm such as *cat, cats* are semantically related to each other on the basis of the cognitive category of PLURALITY, the members of a derivational paradigm can be semantically related to each other based on cognitive categories such as RESULT OF ACTION, AGENT, INSTRUMENT, etc.

As to the third feature attributed to inflectional paradigms, derivational paradigms are typically defined as being more irregular and less predictable than inflectional paradigms (Bauer 1997; Štekauer 2014; Bauer 2019). According to Bauer, gaps can be easily found in derivational paradigms, and words are not considered members of derivational paradigms unless they are established forms in the language (2019: 165). Furthermore, derivational patterns are not as easily generalisable as inflectional ones, as they cannot be applied to all the cases of the same word-class. In fact, this absence of regularity in derivational paradigms is the most frequently cited argument to justify their "non-existence" (Štekauer 2014: 357).

However, this argument is not entirely justified for rejecting the notion of derivational paradigm because the regularity and predictability of inflectional paradigms do not lack controversy, either. Phenomena such as defectiveness, deponency, overabundance and syncretism in inflectional paradigms reveal that inflection is not as regular as initially considered and that it can also be problematic (Bauer 1997; Boyé and Schalchli 2016; Bonami and Strnadová 2019).

On the other hand, predictability and regularity can also be found in derivational paradigms (Bauer 1997; Antoniová 2016). For example, the nominal forms of verbs which end in *-ize* take *-ation* (*colonize-colonization*, *realize-realization*); the nominal forms of verbs ending in *-ify* take *-ication* (*simplify-simplification*, *beautify-beautification*); and the nominalisations of verbs that end in *-ate* take *-ion* (*hesitate-hesitation*, *anticipate-anticipation*). Furthermore, gapless derivational paradigms are canonical (Stump 2019: 273).

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The notion of derivational paradigm is not only justified by the fact that a parallel analysis can be carried out of both inflectional and derivational paradigms but also by the fact that derivational paradigms are important in derivation. This is because the words of the same derivational paradigm are inter-related (Beecher 2004: 24-29).

2.2. Allomorphy

Allomorphy is the phenomenon whereby different morphs, namely allomorphs, realise one and the same morpheme (Plag 2018: 28). For example, the definite article *the* has three realisations, that is, three (allo)morphs:

i.   [ðə] when the article is followed by a consonant sound;

ii. [ði] when *the* is followed by a vowel sound; and

ii. [ˈðiː] when *the* is uttered in isolation.

This shows that different morphs are allomorphs of one and the same morpheme when they present the same meaning or function. Furthermore, it also shows that allomorphs stand in complementary distribution, that is, they are not in competition with each other because the occurrence of one to the detriment of the others is conditioned by the linguistic environment.

Some authors (Kastovsky 2006; Booij 2007; Embick 2012) analyse instances of allomorphy as part of a scale. At one end, there are cases which can be explained by the phonological rules of the language (Kastovsky 2006: 159; Booij 2007: 32; Embick 2012: 22-23). An example of this is the formation of the regular past in English because a phonological rule (i.e. voicing assimilation) assimilates the morpheme for the expression of the past tense to the preceding sound (Lieber 2015: 178). Thus, the morpheme has three allomorphs:

i.   [t] after voiceless consonants;

ii. [d] after voiced consonants; and

iii. [ɪd] after [t] or [d].

At the other extreme, there are cases that present suppletion, i.e. one and the same morpheme is expressed by distinct phonological realisations (Booij 2007: 33; Embick 2012: 23). For instance, in the inflectional paradigm *good*, *better*, Booij argues that the lexeme GOOD may be realised by two different stems, *good* and *bet-* (2007: 33).

The cases of allomorphy between the above extremes are cases which do not fit neatly into either of them. This is because alternations are restricted to a specific subset of words and because they share most of their phonological material (Booij 2007: 33; Embick 2012: 23).

As can already be deduced, allomorphy can occur in both affixes and bases:

(7) Affix allomorphy

    i.   *cause*   + *al*   →   *caus**al***

    ii. *pole*   + *al*   →   *pol**ar***

    iii. *inflection*   + *al*   →   *inflection**al***

    iv. *nodule*   + *al*   →   *nodul**ar***

    v. *distribution* + *al*   →   *distribution**al***

    vi. *cellule*   + *al*   →   *cellul**ar***

<div align="right">(Plag 2018: 29, emphasis added)</div>

(8) Base allomorphy

    explain   [ɪkˈspl**eɪ**n]

    explan + *ation*   [ˌɛksplə**ˈn** + eɪʃən]

    explan + *atory*   [ɪkˈspl**an** + ətɔːri]

<div align="right">(Plag 2018: 28, emphasis added)</div>

The affixes -*al* and -*ar* in (7) are allomorphs of the morpheme {-al}. The occurrence of the allomorphs is determined by the phonological properties of the final segment of the base (whether it is /l/ or not), which means that the occurrence of -*al* and -*ar* is phonologically conditioned. As allomorphy affects the suffix -*al* in (7), that is, the phenomenon occurs at affix level, this is a case of affix allomorphy.

On the other hand, example (8) illustrates different allomorphs of the base EXPLAIN, which implies that there is base or stem allomorphy in this case. According to Plag, the pronunciation of the base EXPLAIN varies depending on the affix attached to it (2018: 28). The attachment of the suffix -*ation* triggers (i) shift of the main stress from the second syllable of the base to the third; (ii) lowering in the pronunciation of the first vowel from [ɪ] to [ɛ]; and (iii) secondary stress on the first syllable of the derivative. Meanwhile, the attachment of -*atory* triggers the change of pronunciation of the second syllable of the base from [eɪ] to [a]. As the base allomorphs are conditioned by the type of affix attached to the base, allomorphy in these cases is morphologically conditioned.

The aforementioned cases of *house*ᴺ /haʊs/ vs. *house*ⱽ /haʊz/, *import*ᴺ /ˈɪmpɔːt/ vs. *import*ⱽ /ɪmˈpɔːt/ and *rebel*ᴺ /ˈrɛbl/ vs. *rebel*ᴺ /ɹɪˈbɛl/ illustrate phonological base allomorphy. In each pair, there are phonological changes (voicing of the final phoneme, stress shift, and stress shift in combination with consonant syllabicity/ vowel reduction, respectively) that affect the base of the words and that distinguish the nouns from the verbs. However, unlike the examples in (7) and (8), it is not clear what conditions or motivates these cases of base allomorphy.

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Finally, it must be noted that allomorphy can also be studied from a historical perspective. English presents two lexical strata, as there are words of native origin (i.e. Germanic origin) and of non-native origin (i.e. mostly Latin and French loanwords). Allomorphy in the native stratum of the lexicon can be traced back to the Old English period, as alternations were common in Old English (Kastovsky 2006: 171). For example, traces of such alternations can be found in the so-called 'strong verbs', such as *write-wrote-written* from OE *wrītan-wrāt-writon-ġewriten*. By contrast, the non-native words typically display the alternations of their native language. For instance, in the pair *deduce-deduction*, the derivative (*deduction*) takes the participial stem form of the Latin verb *duco, -is, -ere, duxi, ductum* 'to lead', which presented different stems.

2.3. Conversion

The underlined words in Examples (1) and (2), i.e. *bottle* and *bottles*, are examples of the process of conversion. Schönefeld describes it as "the use of a word of a particular category as a word of another category, without this being indicated by any formal marker or change" (2005: 131). This description captures the two conditions typically required for this process to happen: (i) word-class change and (ii) formal identity between the original word and the resulting one (Valera 2014: 154). The process can be interpreted in numerous ways. In fact, depending on the interpretation, this phenomenon is referred to as 'zero-derivation' (Lee 2009), 'conversion' (Sweet 2014), 'event-schema metonym' (Dirven 1999; Schönefeld 2005) and 'relisting of lexical items' (Lieber 2005), among others. Given that there is not a unanimously accepted interpretation of the process, I will simply refer to it as conversion henceforth.

Conversion can be described from a diachronic perspective, accounting for the formal identity of conversion-related pairs. Jespersen highlights that one of the most characteristic features of Modern English is the formal identity of a number of words which belong to different word-classes (1949: 84). This author explains that in Old English, there were verbs, nouns and adjectives which shared the same root and were distinguishable from one another by their endings (Jespersen 1949: 86). This is the case of the OE pair *lufu*^{N} 'love' - *lufian*^{V} 'to love'. As the English language developed in the subsequent centuries, the vowels of unstressed syllables were levelled to <e> [ə] (Late Middle English *luve*^{N} 'love' - *luven*^{V} 'to love'), and the <e> and <n> of the endings eventually ceased to be pronounced (fifteenth century), leading thus to the current formal identity (*love*^{N} /lʌv/ - *love*^{V} /lʌv/) of two originally distinct words (Jespersen 1949: 86-87). Therefore, this approach does not regard one of the members of conversion-related pairs as the result of

word-formation but considers the evolution of the English language as the reason for the existence of formally identical, category-specific pairs in present-day English.

Another interpretation is that by Sweet (2014). In the same way that *white* can become another part of speech (i.e. word-class) by the addition of the suffix *-ness* whiteness), the verb *walk* (as in *he walks*) can be made into another part of speech without any modification, except for the change of inflection (Sweet 2014: 38). Sweet regards conversion as a matter of form and distribution, and not of meaning, because converted words adopt the formal properties (i.e. inflection) of the part of speech into which they have been made and the distribution of that part of speech within the sentence (2014: 39). Under this interpretation, *bottle* in (1) is a noun because it may take the plural ending *-s* (*bottle → bottles*) and because it may be preceded by articles (such as *a*) and followed by prepositional phrases (such as *of wine*), just as nouns usually do. On the other hand, *bottle* in (2) is a verb because it may take verbal inflectional endings (such as the *-s* ending for third person singular) and because it may be preceded by noun phrases functioning as subjects (such as *my uncle*) and followed by noun phrases functioning as objects (such as *wine*).

Together with Sweet's account, the most widespread interpretation is that of conversion as zero-derivation. For this approach, conversion is a word-formation process, an "instantiation of derivation" (Don 2005: 2). Marchand explains that conversion is a type of derivation which produces new words by the addition of a zero-morpheme (in Martsa 2013: 11-12), i.e. a morpheme without phonic expression, and justifies its existence by highlighting the same syntactic-semantic pattern (e.g. "make X") in derivatives by overt morphemes (e.g. *legal-ize*^{V}, *national-ize*^{V}, *steril-ize*^{V}) and by the covert/zero morpheme (e.g. *clean*^{V}, *dirty*^{V}, *tidy*^{V}). Conversion as zero-derivation presents advantages over other interpretations: (i) it offers a simple description of the phenomenon (Lee 2009); (ii) it accounts for the base-derivative relationship between the members of conversion pairs (Plag 2018: 105); (iii) it solves the problem of directionality of conversion by determining that the semantically more complex form must be the derived (i.e. converted) word (Plag 2018: 106); and (iv) it provides an explanation for pairs such as *éxport*^{N}-*expórt*^{V} and *hou*[s]*e*^{N}-*hou*[z]*e*^{V} by arguing that, as zero-morphemes are affixes, they can cause phonological changes (Lee 2009).

Nevertheless, this interpretation is controversial. The existence of a single zero-morpheme is questionable because, given their semantic diversity, one and the same zero-affix could not cover all the different types of conversion, which implies that there must be more than one zero-morpheme (Štekauer in Schönefeld 2005: 137). Sanders justifies the zero morpheme on the basis of its parallelism in meaning and function with overt morphemes ('overt analogue criterion') (in Plag 2018:

110). However, Plag argues that the mere application of the overt analogue criterion shows that there is no such parallelism between overt affixes and the zero-morpheme, challenging the existence of the latter (2018: 110-112).

Within the field of word-formation, conversion has also been described as a "unique, specific word-formation process, based upon principles different from those that characterize the process of derivation" (Štekauer in Schönefeld 2005: 137). In relation to its productivity, conversion is an extremely productive process. Bauer argues that all word-classes can undergo conversion, that conversion can produce new words of any of the open word-classes, and that derivatives, compounds, acronyms, blends, clipped forms and simple words are possible inputs to conversion, as there do not seem to be morphological constraints on the forms that can be bases of this process (1983: 226). The only apparent restriction on the process is that derived nouns are rarely bases of conversion, especially of converted verbs (Bauer 1983: 226).

From a cognitive linguistics perspective, conversion is regarded as a conceptual phenomenon of semantic extension with morpho-syntactic implications (Schönefeld 2005: 140-150). The basis of this proposal is that there is a metonymic relationship between the source base and the converted word (Schönefeld 2005: 149-150). Dirven argues that conversion involves a type of metonymy applied at a predicate argument level, which means that any participant (except for the agent) in an event schema can carry saliency and, therefore, be an input to conversion (1999: 278). In relation to this, Dirven coined the term 'event-schema metonymy' to refer to the process whereby a salient participant becomes the designation for an event itself (1999: 279). Morpho-syntactic consequences emerge from this process as the converted word adopts the inflectional paradigm and the syntactic distribution of the associated word-class (Schönefeld 2005: 140).

Another interpretation considers conversion as category underspecification. Focusing on noun-verb and verb-noun conversion pairs, Farrell (2001) argues that there is no process (either of word formation or of any other kind) that creates words of a certain word-class from words of another. This is because words usually identified with conversion, such as *kiss*, *hammer*, *bag* or *sneeze*, are categorially underspecified, which means that they are not inherently associated to any word-class. According to Farrell (2001), this approach to conversion is preferable, as it accounts for why there is no derivational morphology indicating the creation of one word from another and for the related meaning of conversion pairs.

A final interpretation of conversion is that of conversion as relisting of lexical items in the lexicon. Lieber explains that conversion is not a derivational process nor any other type of directional process, but a process of relisting lexical words in the mental lexicon (2005: 421). For this author, a converted word simply comes from a process which consists in re-entering in the lexicon an already existing word as a

new word of another word-class (Lieber 2005: 421). Thus, a converted verb is simply the result of relisting a noun or an adjective as a verb in the lexicon (Lieber in Don 2005: 7). Therefore, instead of being a morphological process, conversion is regarded as a process similar to coinage (Lieber 2005: 421).

The interpretations of conversion reviewed are attempts to explain what this process is. Another dilemma of conversion is to identify the exact nature of the relation between conversion pairs. Valera and Ruz (2020) highlight the relevance of this question given the unique profile of conversion, i.e. the formal identity, the word-class contrast and the semantic relatedness of conversion pairs. Some of the reviewed proposals already provide a description for this relation. To the zero-derivation approach, the relation between conversion pairs is that of a base and its derivative (i.e. a derivational relation) and, to the conversion as event-schema metonymy proposal, there is a metonymic relation between the said pairs. Valera and Ruz (2020) argue that for central cases of conversion, that is, clear-cut instances of the process (e.g. *dirty*[Adj]-*dirty*[V] or *spy*[N]-*spy*[V]), conversion's unique profile is accurately covered in terms of paronymic relations. On the other hand, Valera and Ruz (2020) also argue that the relations of polysemy and homonymy can better account for other (less central) cases, such as those of participial conversion (e.g. *interesting*[V PRS. PART.]-*interesting*[Adj]).

Finally, note that if conversion is characterised by the formal identity of the original word and the converted one, pairs such as *éxport*[N]-*expórt*[V] or *hou*[s]*e*[N]-*hou*[z]*e*[V] deserve special consideration, as their members are not formally identical. So far, conversion as zero-derivation is one of the few approaches[2] that has offered an explanation for such cases, which implies that further research in the field is needed. The present study aims to address this gap, at least partially, by investigating stress shift in pairs such as *export*[N]-*export*[V].

2.4. The Present Study

As has been seen, cases of stress shift in noun-verb conversion pairs (*ímport*[N]-*impórt*[V], *éxport*[N]-*expórt*[V]) deserve special treatment. On the one hand, they challenge the formal identity that characterises conversion. On the other hand, they present a phonological base allormorphy whose conditions or motivations are unclear. As a result, the present study aims to investigate these cases of noun-verb conversion pairs. More specifically, it intends to answer the following research questions (RQs):

RQ1 Which are the most frequently occurring noun-verb conversion pairs displaying stress shift?

RQ1 Why does this type of allomorphy occur?

3. Method

In order to investigate stress shift in noun-verb conversion pairs, a corpus of 157 noun-verb conversion pairs was compiled for analysis. Out of these pairs, 25 were clear cases of noun-verb conversion pairs with stress shift, and they were closely examined in order to answer the research questions. In what follows, Section 3.1 lists the instruments needed to compile the data, and Section 3.2 provides a description of the steps followed to elaborate a list of noun-verb conversion pairs presenting stress shift.

3.1. Materials

Two frequency lists were used for the compilation of the source data: a frequency list of nouns and a frequency list of verbs. A frequency list is a list in which the words of a given corpus are grouped by frequency of occurrence and by word-class, among other criteria. The frequency lists used in the study are contained in *Word Frequencies in Written and Spoken English* by G. Leech, P. Rayson and A. Wilson and were extracted from the entry "Frequency lists" of the authors' companion website to their book (Leech et al. 2001).

The frequency lists were used to guarantee a random selection of the words to be examined in the study. As the aim was to investigate stress shift in *noun-verb* conversion pairs, the frequency lists used were that of nouns[3] and that of verbs.[4]

Next, the online version of the *Oxford English Dictionary (OED)* was used to determine which of the compiled noun-verb conversion pairs displayed stress shift. Additionally, the *OED* was used to examine the etymology of the noun-verb conversion pairs and their approximate year of introduction into the English language.

3.2. Procedure

The steps (Ss) below were followed to select the data to be analysed and to elaborate a list of noun-verb conversion pairs presenting stress shift:

S1.   From the aforementioned "Frequency lists" entry, the frequency lists of nouns and verbs were copied and pasted in a single column in a Word document, creating an extensive list of words.

S2.   Tab stops were removed from the list of words.

S3.   The list of words was alphabetised.

S4.   The alphabetised list of words was copied and pasted into an Excel document.

S5. Items presenting percentages, numbers or symbols such as "&", "*" or "/" were removed from the list.

S6. Nouns and verbs that were not in conversion pairs were also removed from the list in order to exclusively leave noun-verb conversion pairs.

S7. Monosyllabic noun-verb conversion pairs were eliminated from the list, as they cannot display stress shift.

S8. The pronunciation of the remaining disyllabic and polysyllabic noun-verb conversion pairs was checked using the *OED*, assigning value 0 to the pairs that did not present stress shift and value 1 to those which did display this type of allomorphy. The pairs that were assigned value 1 included pairs such as *import*[N] /ˈɪmpɔːt/ - *import*[V] /ɪmˈpɔːt/, which present only stress shift, and pairs such as *object*[N] /ˈɒbdʒɛkt/ - *object*[V] /əbˈdʒɛkt/, which display not only stress shift but also vowel reduction. Even though the latter present another type of allomorphy, i.e. vowel reduction, they were included in the study because they do exhibit stress shift.

S9. At the same time, the etymology of the disyllabic and polysyllabic noun-verb conversion pairs was noted together with the year in which they were first introduced into English.

S10. The pair *address*[N]-*address*[V] was assigned value 0 because only the American pronunciation of the noun displayed stress shift from the last syllable to the first (i.e. /ˈadrɛs/) and because it is not even the preferred pronunciation, as it co-exists with the pronunciation that stresses the noun on the last syllable (i.e. /əˈdrɛs/).

S11. A total of 27 pairs with value 1 ("stress shift") was placed in a folder called "Pairs with stress shift" to be studied in isolation, thus allowing the identification of common patterns among the exemplars. The pairs *attribute*[N]-*attribute*[V] and *finance*[N]-*finance*[V] were removed from the analysis (see Section 4 for further details). Thus, a list of 25 noun-verb conversion pairs with stress shift was obtained in order to study this type of allomorphy.

Furthermore, the morphological structure "prefix + base" was observed in the 25 pairs. After this observation, the next steps were followed:

S12. As some of the disyllabic pairs with value 0 ("no stress shift") presented the same morphological structure as the 25 pairs under study, they were extracted, placed into another Excel folder called "Pairs to be compared" and classified into the categories "Pairs stressed on the last syllable" and "Pairs stressed on the first syllable".

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S13. The 25 pairs of the study were added to the folder "Pairs to be compared" to be contrasted with the pairs already placed there (i.e. those without stress shift).[5]

4. Results

From the frequency lists of nouns and verbs, a total of 4,133 words was collected. As shown in Figure 1, 828 words (20% of the collected words) were in noun-verb conversion pairs, and the remaining 3,305 were removed as they were not relevant for the purposes of the study (note that the removed words were not in noun-verb conversion pairs).
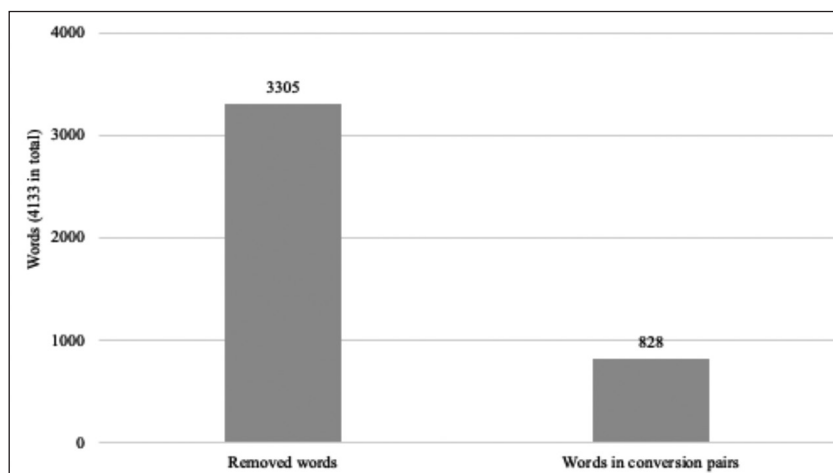
Figure 1. Removed words and words in noun-verb conversion pairs

The fact that there are 828 words in noun-verb conversion pairs means that there is a total of 414 pairs.

Stress shift is a type of allomorphy that can only occur in words with two or more syllables, as stress can shift from one syllable to another only in those cases. As shown in Figure 2, 257 pairs, i.e. 62% of the pairs, were removed because they were monosyllabic. On the other hand, 137 pairs were disyllabic, and 20 pairs were polysyllabic, which suggests that there is a total of 157 pairs that could present stress shift.
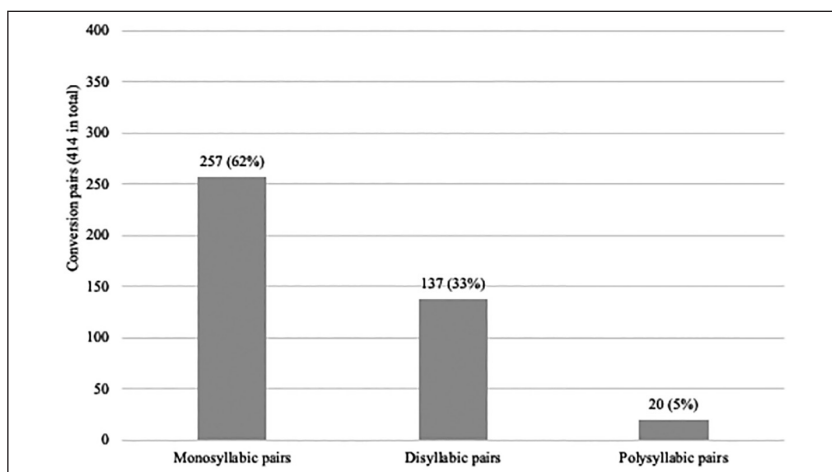
Figure 2. Monosyllabic, disyllabic and polysyllabic pairs

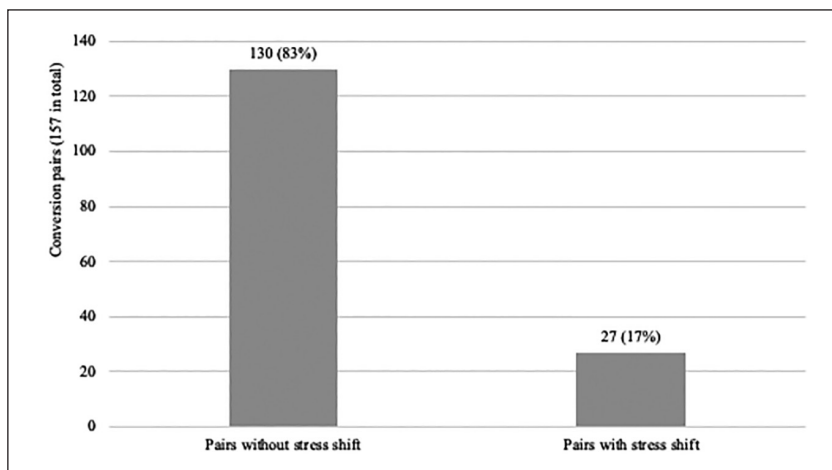Out of these 157 noun-verb conversion pairs, only 27 (17%) presented stress shift, as shown in Figure 3.

Figure 3. Pairs without/with stress shift

From the list of the 27 pairs presenting stress shift, two pairs were removed. The pair *attribute*[N]-*attribute*[V] was eliminated because it was the only trisyllabic pair and, therefore, it could not be compared with other pairs of the same kind. The second was *finance*[N]-*finance*[V]. The decision to eliminate this pair was due to the fact that it did not follow the morphological structure "prefix + base" that the rest of pairs presented (further details hereunder). Therefore, the study was eventually based on a list of 25 disyllabic noun-verb conversion pairs to explain stress shift.

Stress shift affects the pairs in a systematic way. As shown in Table 1,[6] nouns tend to be stressed on the first syllable while verbs are usually stressed on the last one.[7] This systematic stress shift behaviour of disyllabic noun-verb conversion pairs is not surprising, as it is a well-documented fact (see sources as early as Gimson 1962: 227-229; Sherman 1975). Nonetheless, the list in Table 1 indicates which are some of the most frequently occurring noun-verb conversion pairs displaying stress shift. Furthermore, it suggests that cases of stress shift in combination with vowel reduction tend to be more common, as the examples of stress shift and vowel reduction (18) far outnumber the pairs displaying only stress shift (7).

N-V conversion pairs	Pronunciation
access[N] vs. *access*[V]	/ˈaksɛs/ vs. /əkˈsɛs/
comment[N] vs. *comment*[V]	/ˈkɒmɛnt/ vs. /kəˈmɛnt/
conduct[N] vs. *conduct*[V]	/ˈkɒndʌkt/ vs. /kənˈdʌkt/
contact[N] vs. *contact*[V]	/ˈkɒntakt/ vs. /kənˈtakt/
contract[N] vs. *contract*[V]	/ˈkɒntrakt/ vs. /kənˈtrakt/
contrast[N] vs. *contrast*[V]	/ˈkɒntrɑːst/ vs. /kənˈtrɑːst/
desert[N] vs. *desert*[V]	/ˈdɛzət/ vs. /dɪˈzɜːt/
discharge[N] vs. *discharge*[V]	/ˈdɪstʃɑːdʒ/ vs. /dɪsˈtʃɑːdʒ/
export[N] vs. *export*[V]	/ˈɛkspɔːt/ vs. /ɛkˈspɔːt/
extract[N] vs. *extract*[V]	/ˈɛkstrakt/ vs. /ɛkˈstrakt/
import[N] vs. *import*[V]	/ˈɪmpɔːt/ vs. /ɪmˈpɔːt/
increase[N] vs. *increase*[V]	/ˈɪŋkriːs/ vs. /ɪŋˈkriːs/
object[N] vs. *object*[V]	/ˈɒbdʒɛkt/ vs. /əbˈdʒɛkt/
present[N] vs. *present*[V]	/ˈprɛznt/ vs. /prɪˈzɛnt/
proceed[N] vs. *proceed*[V]	/ˈprəʊsiːd/ vs. /prəˈsiːd/
progress[N] vs. *progress*[V]	/ˈprəʊgrɛs/ vs. /prə(ʊ)ˈgrɛs/
project[N] vs. *project*[V]	/ˈprɒdʒɛkt/ vs. /prəˈdʒɛkt/
protest[N] vs. *protest*[V]	/ˈprəʊtɛst/ vs. /prəˈtɛst/

record[N] vs. *record*[N]	/ˈrɛkɔːd/ vs. /rɪˈkɔːd/
research[N] vs. *research*[V]	/ˈriːsəːtʃ/ vs. /rɪˈsɜːtʃ/
subject[N] vs. *subject*[V]	/ˈsʌbdʒɛkt/ vs. /səbˈdʒɛkt/
survey[N] vs. *survey*[V]	/ˈsɜːveɪ/ vs. /səˈveɪ/
suspect[N] vs. *suspect*[V]	/ˈsʌspɛkt/ vs. /səˈspɛkt/
transfer[N] vs. *transfer*[V]	/ˈtrɑːnsfə/ vs. /trɑːnsˈfɜː/
transport[N] vs. *transport*[V]	/ˈtrɑːnspɔːt/ vs. /trɑːnˈspɔːt/

Table 1. Pronunciation of the 25 noun-verb (N-V) conversion pairs with stress shift[8]

As to the year of introduction of the pairs into English, Figure 4 shows the approximate year in which each member (nouns and verbs) of the 25 pairs was introduced.
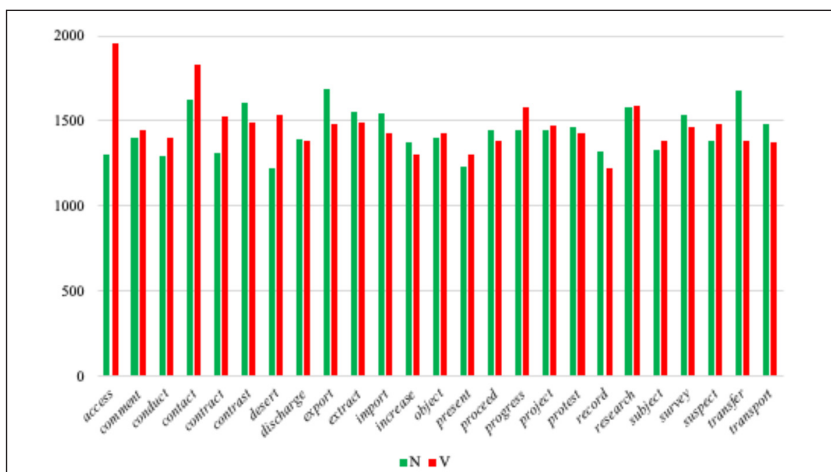

Figure 4. The 25 N-V conversion pairs and their approx. year of introduction into English

Each member of the 25 pairs entered the English language at different points in time. Out of the 50 members, 36 entered during the Middle English period (1150-1500) and 14 were introduced during the Modern English period (1500-1900).

Regarding the etymology of the pairs, all of them are of Romance origin (see Figure 5). It was found that 7 pairs (28%) came clearly from Latin, that 5 pairs (20%) were originally French and that 13 pairs (52%) were from either Latin or French origin.
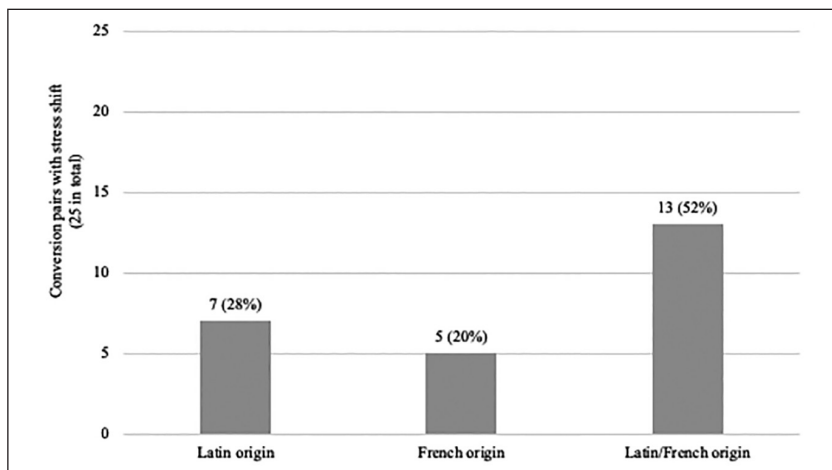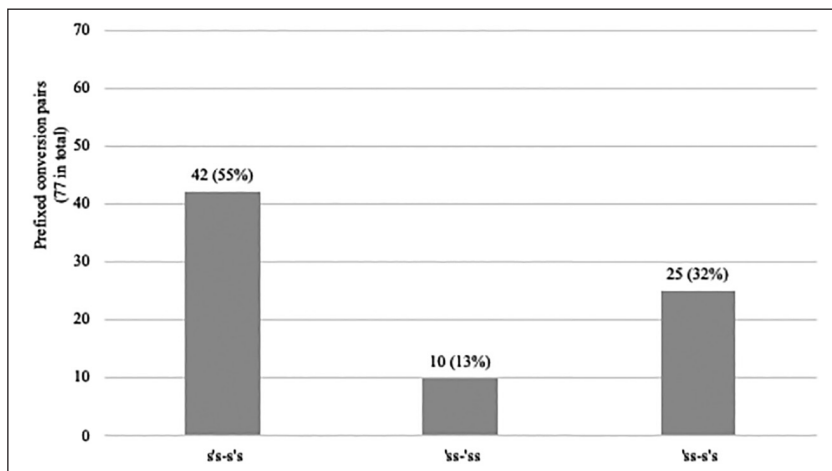
Figure 5. Etymology of the pairs

Figure 6. Prefixed pairs with stress on the last syllable, with stress on the first syllable and with stress shift

Apart from being of Romance origin, the 25 pairs of the study share the same morphological structure: "prefix + base". This is because the pairs derive from prefixed verbs in their language of origin, i.e. Latin and French.

The common structural pattern "prefix + base" was not only observed in the 25 pairs presenting stress shift but also in some disyllabic pairs where stress shift did not occur. Additionally, these 0-valued disyllabic pairs were also of Romance origin. Taking into account these similarities and differences, three types of pairs were distinguished: pairs with both members stressed on the last syllable (sʹs-sʹs), pairs with both members stressed on the first syllable (ʹss-ʹss) and pairs with stress shift (ʹss-sʹs). As can be seen in Figure 6, there is a total of 77 pairs with the morphological structure "prefix + base". Of these, 42 are stressed on the last syllable, 10 are stressed on the first syllable, and, evidently, 25 present stress shift.

5. Discussion

Present-day English is a language that is originally Germanic. However, throughout its history, English has been influenced by other languages, especially Latin and French. Such influence led to the introduction of Latin and French words into the English vocabulary. For this reason, English presents two lexical strata: a native stratum (i.e. words of Germanic origin) and a non-native stratum (i.e. words of mostly Latin and French origin) (Kastovsky 2006: 170). The native stratum of the vocabulary follows the Germanic assignment of stress. In Old English, stress was assigned to the first syllable of the root (Kastovsky 2006: 172). For illustration, consider the following OE nouns and verbs from Baugh and Cable: *gíefu*[N] 'gift', *húnta*[N] 'hunter', *méte*[N] 'food, meat', *líbban*[V] 'to live', *dríncan*[V] 'to drink' and *hélpan*[V] 'to help' (2013: 52-57). In the case of OE prefixed verbs, stress was assigned to the first syllable of the root as well: *be-séttan*[V] 'to appoint' and *wiþ-sprécan*[V] 'to contradict' (Baugh and Cable 2013: 62).

During the Old English period (450-1150), stress assignment was quite homogenous because, as Baugh and Cable point out, "the vocabulary of Old English is almost purely Germanic" (2013: 52). However, stress assignment was influenced by the Latin and French loanwords that entered English in the Middle English (1150-1500) and the Modern English (1500-1900) periods. According to Kastovsky, French and Latin assign stress depending on syllable weight, that is, stress falls on heavy syllables (2006: 172). This implies that the Romance rule of stress assignment would co-exist with the Germanic assignment of stress if the Romance loanwords did not adapt to the Germanic stress system. Thus, as Kastovsky points out, "we have two competing stress assignment rules in the non-native vocabulary" (2006: 172).

The results of the empirical study show that stress shift in noun-verb conversion pairs occurs in prefixed disyllabic pairs of Romance origin. Furthermore, stress shift takes place in the same way in all the pairs, that is, there is a tendency for nouns to be stressed on the first syllable and for verbs to be stressed on the last syllable. These findings lead to the formulation of the following hypothesis as to

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why this type of allomorphy happens: stress shift in noun-verb conversion pairs occurs as a result of their adaptation to the Germanic stress system.

Either directly or through their French adaptation, the vast majority of pairs derive from the participial stem of Latin prefixed verbs. The supine forms and the deverbal nouns of Latin prefixed verbs present the participial stem of the verb and are usually trisyllabic items stressed on the penultimate syllable, as this is the heavy one. Consider the Latin verb *extrahô, -is, -ere, extrâxî, extractum* 'to extract' for illustration. The supine form (*extractum*) of this Latin prefixed verb (*ex-trahĕre*) is a trisyllabic item stressed on the penultimate syllable (*extráctum*). If the participial stem *extract-* were to be borrowed by other languages such as French or English, one possible outcome would be for the stem to maintain the syllable *-tract-* stressed in those languages.

The 25 pairs of the study were introduced into English from Latin and French during the Middle English and the Modern English periods. Furthermore, most of them originally derive from the participial stem of Latin prefixed verbs, as mentioned before. Applying the above logic followed with the participial stem *extract-*, it is very probable that the pairs still enjoyed the Romance stress rule when they first entered the English language.

Once the pairs were part of the English lexicon, they must have adapted to the Germanic stress system, which caused stress shift. For instance, the members of the pair *extract*^{N}-*extract*^{V} were initially stressed on the syllable *-tract-*. However, as Germanic languages tend to assign stress to the first syllable, there was a stress shift in nouns from the originally stressed syllable to the first syllable. This stress shift did not affect verbs because the Germanic stress system does not stress prefixes in prefixed verbs, but the first syllable of the root, and stress was already on that syllable.

The above explanation can account for the stress shift of those noun-verb conversion pairs which originally derived from the participial stem of a Latin prefixed verb. Among these are *access*^{N}-*access*^{V}, *comment*^{N}-*comment*^{V}, *conduct*^{N}-*conduct*^{V}, *contact*^{N}-*contact*^{V}, *contract*^{N}-*contract*^{V}, *object*^{N}-*object*^{V}, *subject*^{N}-*subject*^{V}, *suspect*^{N}-*suspect*^{V}, *present*^{N}-*present*^{V} or *project*^{N}-*project*^{V}. However, there are other pairs which derive from the infinitive form of a Latin prefixed verb, either directly from Latin or through the French adaptation. This is the case of the pairs *export*^{N}-*export*^{V}, *import*^{N}-*import*^{V}, *transport*^{N}-*transport*^{V} or *transfer*^{N}-*transfer*^{V}. The Latin verbs *exportāre* 'to export', *importāre* 'to import', *transportāre* 'to transport' and *transferre* 'to transfer' were most likely to have been introduced without the infinitive inflectional ending, so that they could adopt the French infinitive ending *-er* or the Middle English *-en*. Considering the Middle English adaptation of the verbs (i.e. *exporten*, *importen*, *transporten* and *transferren*, respectively), these verbs must have been stressed on the penultimate syllable following the Romance stress rule, as the heavy syllable is the penultimate one in these cases. Following the

Germanic stress system, the verbs must have maintained the stress on that position, as that is the first syllable of the original root, and their converted nouns would have shifted stress to the first syllable or would have been created directly with the stress on the first syllable.

It must be noted that stress shift may trigger another phonological change in some pairs, i.e. the pairs that were categorised as displaying both stress shift and vowel reduction. In these pairs, there is a tendency for stress to enhance the quality of the first-syllable vowel in nouns. In most cases, when stress is shifted to the first syllable, the vowel becomes more prominent, changing from [ə] to [ɒ], as in the pair *contact*^{N}-*contact*^{V}; to [ʌ], as in the pair *suspect*^{N}-*suspect*^{V}; or to [a], as in the pair *access*^{N}-*access*^{V}. In other cases, the first-syllable vowel changes from [ɪ] to [ɛ] as in the pair *desert*^{N}-*desert*^{V}.

Lastly, the study also shows that there are noun-verb conversion pairs that derive from Latin prefixed verbs and whose members are stressed either on the last syllable or on the first one. For discussion, the pairs *suppórt*^{N}-*suppórt*^{V} and *prómise*^{N}-*prómise*^{V} will be considered. The Latin origin of *suppórt*^{N}-*suppórt*^{V} is the prefixed verb *supportāre* (*sub-portare*) 'to support'. This verb was introduced into English either directly from Latin or through its French adaptation *supporter*. Either way, the verb must have entered without the infinitive inflectional ending to adopt the Middle English *-en* and must have been stressed on the penultimate syllable following the Romance stress rule. In this case, the converted noun did not adapt to the Germanic stress system but maintained the Romance stress pattern. Regarding *prómise*^{N}-*prómise*^{V}, its Latin origin is the noun *prōmissum* 'promise', which derives from the participial stem *prōmiss-* of the prefixed verb *prōmittere* 'to promise' (*prō-mittere*). In this case, the noun must have entered the English language with the stress on the syllable *-mi-* and shifted it to the first syllable. Then, the verb must have been converted from the noun following the stress pattern of the latter.

6. Conclusion

Conversion is a word-formation process that has been extensively described in the literature, as shown in Section 2.3. Regardless of how it has been interpreted, the process is characterised by the formal identity, the word-class contrast and the semantic relatedness between the original word and the converted one.

As any other word-formation process, conversion may be affected by allomorphy, a phenomenon whereby one morpheme may have different realisations, i.e. allomorphs. Allomorphy can take place in both affixes and bases. The type of allomorphy that may occur in conversion is base allomorphy, i.e. the base of the

original word and that of the converted one may present different realisations. Out of the three possible cases of allomorphy in conversion (i.e. voicing of the final phoneme, stress shift, and stress shift in combination with vowel reduction), certain conclusions have been reached in this study about stress shift in noun-verb conversion pairs.

Stress shift in noun-verb conversion pairs seems to have a historical explanation. The phenomenon occurs in noun-verb conversion pairs that originally derive from Latin prefixed verbs. When the words entered the English language either directly from Latin or through their French adaptation, they adapted to the Germanic stress system. Thus, stress was shifted from its original position to the first syllable in nouns but was maintained in the syllable after the prefix in the case of verbs, following the Germanic stress system which stresses nouns on the first syllable and the first syllable of the root in prefixed verbs.

Despite the findings, further research is still a *desideratum* in this field. There are other noun-verb conversion pairs that originally derived from Latin prefixed verbs and that do not display stress shift (e.g. *support*[N]-*support*[V] and *promise*[N]-*promise*[V]), which implies that what makes these pairs different from pairs with stress shift is still unexplained.

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Acknowledgements

Notes

1. The term 'stress shift' refers here to a type of phonological base allomorphy in which one member of a noun-verb conversion pair is stressed on a particular syllable while the other member is stressed on a different one. For instance, stress shift may be found in the pair *import*[N]-*import*[V] because, while stress falls on the first syllable in the noun, it falls on the last one in the verb.

In other fields of linguistics, i.e. phonetics and phonology, stress shift rather refers to a contextual shift of stress in order to avoid stress on adjacent syllables (*good ˌafterˈnoon* vs. *ˈafternoon ˈtea*). However, this is not how the term is used here.

2. Carstairs-McCarthy (2006) addresses this issue as well. He argues that the relationship between *éxport*[N]-*expórt*[V] or *hou*[s]*e*[N]-*hou*[z]*e*[V] can be accounted for by their internal modification as "derivational relationship is signalled not by adding new

material to the base (that is, by affixation) but by changes internal to the base itself" (Carstairs-McCarthy 2006: 752).

3. The frequency list of nouns is available via the following link: <https://ucrel. lancs.ac.uk/bncfreq/lists/5_1_all_rank_noun. txt>.

4. The frequency list of verbs is available via the following link: <https://ucrel. lancs.ac.uk/bncfreq/lists/5_2_all_rank_verb. txt>.

5. The data is available via the following link: <https://zenodo.org/doi/10.5281/ zenodo.10077943>.

6. Note that this list is not meant to be exhaustive. The study is based on the conversion pairs extracted from the frequency lists of nouns and verbs specified in Section 3.1. Other pairs displaying the same stress shift pattern, such as *cóntest*[N]-*contést*[V], *díscount*[N]-*discóunt*[V], *ínsult*[N]-*insúlt*[V] or *próduce*[N]-*prodúce*[V] (among others), could also have been included in the study. However, they were not considered because they are not in the frequency lists used.

7. It is also possible to find some variation in the pronunciation of certain members of the pairs. For example, in *comment*[N]-*comment*[V] or *contact*[N]-*contact*[V], stress falls on the first syllable in the noun, but it may fall on the first or the last one in the verb. Conversely, in *research*[N]-*research*[V], the verb is stressed on the last syllable while the noun may be stressed on the first syllable or the last one. Despite this variation, stress shift is the main stress pattern found in the pairs.

8. The transcriptions are mainly based on the British English transcriptions of the *OED*. Note that the cases of variation in footnote 7 have not been transcribed here for the sake of clarity.

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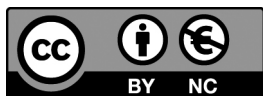
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